

# *Medical Records Data Quality (Individual Identity)*



**TRICARE Data Quality  
Course  
May 20-22, 2008**

USAF  
Chief Medical Officer  
CITPO

# Agenda

- Electronic is not the same as paper
- Systems dependence on identification – registration
- Data entry issues
- Mistaken Identity
- U.S. Air Force's role at the CHCS-level
- The “Hemorrhage” analogy
- Attention to all levels of the organization
- More progress in the future



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# Electronic is different from what we are accustomed

- Newtonian documentation
  - Paper records
  - Visual/Sensory clues
  - Single authoritative copy
  - Human problem solving
  - Images, waveform and multimedia maintained separately
- Electronic documentation
  - Non-physical record
  - Data in bits and bytes
  - Multiple copies possible
  - Weak automated problem solving
  - Potential to include images, waveform and multimedia

# Individual identification is critical

- What is your identity?
  - Demographics (name, DOB, numbers)
  - Relation to payor, employer, system
- Have you been seen before?
- Do you have insurance coverage?
- Do you have an entitlement to care?
- What is your eligibility level of benefit?
- Do you have any previous documentation?



# Individual identification CHCS/CDR

- If not registered on the local Composite Health Care System (CHCS) host:
  - Cannot make an appointment
  - Cannot make a telephone consultation
  - Cannot order consults, lab, pharmacy, x-ray, etc.
  - Cannot retrieve results
  - Cannot credit services rendered or resources consumed
- If not registered with the Clinical Data Repository (CDR) associated information is unavailable



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# Registration is not automated

- Registration in CHCS is not automatic
  - Military personnel system is not capable, timely, or standardized
  - AHLTA CDR is not a registration tool
  - Defense Enrollment Eligibility Reporting System (DEERS) only provides notifications that might auto-register a patient in CHCS for beneficiaries enrolled in TRICARE Prime
  - Enterprise Wide Scheduling and Registration (EWS-R) phase II is not deployed



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# Impact of errors broadly felt

- Registration is local-server specific
- Erroneous records existed long before AHLTA
- Commanders are briefed on local burden monthly
- Tools to detect local errors are limited
- Became Enterprise-wide issue when AHLTA was released
- Current burden of enterprise-wide errors
  - Legacy burden (older errors, undisclosed errors)
  - Ongoing error generation of errors

# Mistakes have serious consequences

- Corruptions of CDR records
  - Patient Safety Risk is real:
    - Information may be misfiled in wrong record
    - Information may be merged with another patient's record
  - Appointments may be lost
  - Standard Ambulatory Data Record (SADR) data may be attributed to wrong record

## **One-Week's trouble ticket activity**

558 total tickets closed

- 398 Patient Merge
- 61 Provider Merge
- 90 Demographics Issues
- 9 Patient Unmerge



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# . . . and errors happen a lot

- Patient/Provider ID errors: most-frequent trouble tickets in the AHLTA (> 70% of trouble tickets/wk)
  - Misfiled clinical information
  - Misfiled encounters and telephone consults
  - Misfiled lab, pharmacy, x-ray orders or results
  - Inaccurate clinical privileges for providers
  - Encounter documentation errors
  - Unattributed credit



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# Burden of identity errors

- 9.7 million records a/o May 2nd
  - 26% potential discrepancy rate (15-38%)
  - 2.5 million potential duplicates
  - 3.9 million potential discrepancies
    - 1.25 million missing patient identification (EDI-PN)
    - 650,000 missing PATCAT
    - 300,000 pseudo-social security numbers

Air Force assessment on all CHCS host sites except Wilford-Hall, Travis and Edwards



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# Air Force survey of CHCS identity data errors

| A                  | B                  | C                             | D                            |
|--------------------|--------------------|-------------------------------|------------------------------|
| HOST_TYPE          | (All)              |                               |                              |
| FACILITY_SIZE      | (All)              |                               |                              |
| FACILITY_TYPE      | (All)              |                               |                              |
| FACILITY_DMIS_CODE | (All)              |                               |                              |
| MAJCOM_NAME        | (All)              |                               |                              |
| Values             |                    |                               |                              |
| Row Labels         | Patient Population | Total Number of Error Records | Total Number of Error Fields |
| Air Force          | 9,793,448          | 2,516,150                     | 3,821,936                    |
| + PACAF            | 257,935            | 40,706                        | 51,441                       |
| + SA East          | 4,648,223          | 1,270,828                     | 2,191,196                    |
| + SA West          | 2,948,078          | 868,657                       | 1,172,325                    |
| + USAFE            | 409,240            | 99,895                        | 125,551                      |
| + AMC              | 1,529,972          | 236,064                       | 281,423                      |
| MTF A              | 134,362            | 60,647                        | 78,693                       |
| MTF B              | 108,402            | 10,574                        | 11,165                       |
| MTF C              | 63,997             | 13,245                        | 14,489                       |
| MTF D              | 345,807            | 30,640                        | 33,421                       |
| MTF E              | 100,984            | 16,922                        | 20,057                       |
| MTF F              | 390,043            | 57,151                        | 70,610                       |
| MTF G              | 386,377            | 46,885                        | 52,988                       |
| + (blank)          |                    |                               |                              |
| Grand Total        | 9,793,448          | 2,516,150                     | 3,821,936                    |

Air Force assessment on all CHCS host sites except Wilford-Hall, Travis and Edwards

## Correction &amp; Tracking

[Work Queue \(I\)](#) | [Work Queue \(II\)](#) | [Reports](#) | [Data Management](#) | [Settings](#)

## Work Queue

## Work Queue (I)

- [No PID PM P/C](#)
- [No PID NonPM P/C](#)
- [No P/C](#)
- [PID P/C](#)
- [Non-Human](#)
- [Search IEN](#)

Pager: total 61 page(s) of  
3028 record(s)

« ‹ › »

10018

| PID | PATCAT | PSUDO | DOB | GENDER | SSN | Non-Human | Error Count | Worked on? |
|-----|--------|-------|-----|--------|-----|-----------|-------------|------------|
|     |        |       |     |        |     |           | 1           |            |

10021

|  |  |  |  |  |  |  |   |  |
|--|--|--|--|--|--|--|---|--|
|  |  |  |  |  |  |  | 1 |  |
|--|--|--|--|--|--|--|---|--|

10040

|  |  |  |  |  |  |  |   |  |
|--|--|--|--|--|--|--|---|--|
|  |  |  |  |  |  |  | 2 |  |
|--|--|--|--|--|--|--|---|--|

10046

|  |  |  |  |  |  |  |   |  |
|--|--|--|--|--|--|--|---|--|
|  |  |  |  |  |  |  | 2 |  |
|--|--|--|--|--|--|--|---|--|

10048

|  |  |  |  |  |  |  |   |  |
|--|--|--|--|--|--|--|---|--|
|  |  |  |  |  |  |  | 2 |  |
|--|--|--|--|--|--|--|---|--|

10050

|  |  |  |  |  |  |  |   |  |
|--|--|--|--|--|--|--|---|--|
|  |  |  |  |  |  |  | 1 |  |
|--|--|--|--|--|--|--|---|--|

10055

|  |  |  |  |  |  |  |   |  |
|--|--|--|--|--|--|--|---|--|
|  |  |  |  |  |  |  | 2 |  |
|--|--|--|--|--|--|--|---|--|

10059

|  |  |  |  |  |  |  |   |  |
|--|--|--|--|--|--|--|---|--|
|  |  |  |  |  |  |  | 1 |  |
|--|--|--|--|--|--|--|---|--|

10060

|  |  |  |  |  |  |  |   |  |
|--|--|--|--|--|--|--|---|--|
|  |  |  |  |  |  |  | 1 |  |
|--|--|--|--|--|--|--|---|--|

10081

|  |  |  |  |  |  |  |   |  |
|--|--|--|--|--|--|--|---|--|
|  |  |  |  |  |  |  | 1 |  |
|--|--|--|--|--|--|--|---|--|

10085

|  |  |  |  |  |  |  |   |  |
|--|--|--|--|--|--|--|---|--|
|  |  |  |  |  |  |  | 2 |  |
|--|--|--|--|--|--|--|---|--|

10093

|  |  |  |  |  |  |  |   |  |
|--|--|--|--|--|--|--|---|--|
|  |  |  |  |  |  |  | 3 |  |
|--|--|--|--|--|--|--|---|--|

10103

|  |  |  |  |  |  |  |   |  |
|--|--|--|--|--|--|--|---|--|
|  |  |  |  |  |  |  | 1 |  |
|--|--|--|--|--|--|--|---|--|

10105

|  |  |  |  |  |  |  |   |  |
|--|--|--|--|--|--|--|---|--|
|  |  |  |  |  |  |  | 1 |  |
|--|--|--|--|--|--|--|---|--|

10110

|  |  |  |  |  |  |  |   |  |
|--|--|--|--|--|--|--|---|--|
|  |  |  |  |  |  |  | 1 |  |
|--|--|--|--|--|--|--|---|--|

10119

|  |  |  |  |  |  |  |   |  |
|--|--|--|--|--|--|--|---|--|
|  |  |  |  |  |  |  | 2 |  |
|--|--|--|--|--|--|--|---|--|

10125

|  |  |  |  |  |  |  |   |  |
|--|--|--|--|--|--|--|---|--|
|  |  |  |  |  |  |  | 2 |  |
|--|--|--|--|--|--|--|---|--|

10126

|  |  |  |  |  |  |  |   |  |
|--|--|--|--|--|--|--|---|--|
|  |  |  |  |  |  |  | 1 |  |
|--|--|--|--|--|--|--|---|--|



Air Force assessment on all CHCS host sites except Wilford-Hall, Travis and Edwards

## Scorecard of facility: All DMIS (DMIS CODE: ----)



### 1. Facility at a Glance

| Name       | DMIS         | Region           | Command      | Branch        | Host Type                 | Size                  | Facility Type        |
|------------|--------------|------------------|--------------|---------------|---------------------------|-----------------------|----------------------|
| All DMIS   | ---          | ---              | ---          | ---           | ---                       | ---                   | ---                  |
| As of Date | Patient Size | Records w/ Error | Records Pct. | Number Errors | Avg Errors Per Err Record | Avg Errors Per Record | Cost @ \$ Per Record |
| 2008-05-02 | 8,866,216    | 2,515,226        | 25.37%       | 3,993,158     | 1.59                      | 0.45                  | \$                   |

### 2. Error Category Matrix

|                             |                     |                     |                     |                         |                   |                       |
|-----------------------------|---------------------|---------------------|---------------------|-------------------------|-------------------|-----------------------|
| Category Total<br>(Records) | 560,604<br>(22.29%) | 307,732<br>(12.23%) | 711,903<br>(28.30%) | 935,050<br>(37.18%)     | 12,245<br>(0.49%) | 2,515,226<br>/        |
|                             | n/a                 | n/a                 | n/a                 | n/a                     | 12,245<br>(0.31%) | 12,245<br>(0.31%)     |
| Non-Human                   |                     |                     |                     |                         |                   |                       |
| Missing PID                 | 560,604<br>(14.04%) | 307,732<br>(7.71%)  | 485,443<br>(12.16%) | n/a                     | n/a               | 1,353,779<br>(33.90%) |
| Missing PAT CAT             | n/a                 | n/a                 | 711,903<br>(17.83%) | n/a                     | n/a               | 711,903<br>(17.83%)   |
| Pseudo SSN                  | 90,182<br>(2.26%)   | 48,212<br>(1.21%)   | 1,610<br>(0.04%)    | 412,012<br>(10.32%)     | n/a               | 552,016<br>(13.82%)   |
| Missing DOB                 | 5,084<br>(0.13%)    | 1,038<br>(0.03%)    | 163,231<br>(4.09%)  | 64<br>(0.00%)           | n/a               | 169,417<br>(4.24%)    |
| Missing Gender              | 19,637<br>(0.49%)   | 2,024<br>(0.05%)    | 158,031<br>(3.96%)  | 51,823<br>(1.30%)       | n/a               | 231,515<br>(5.80%)    |
| Missing SSN                 | 181,642<br>(4.55%)  | 9,617<br>(0.24%)    | 312,118<br>(7.82%)  | 471,151<br>(11.80%)     | n/a               | 974,528<br>(24.40%)   |
|                             | No PID Primary      | No PID NonPrimary   | No PAT CAT          | Other Incomplete Record | Non-Human         | Row Total (Errors)    |

□



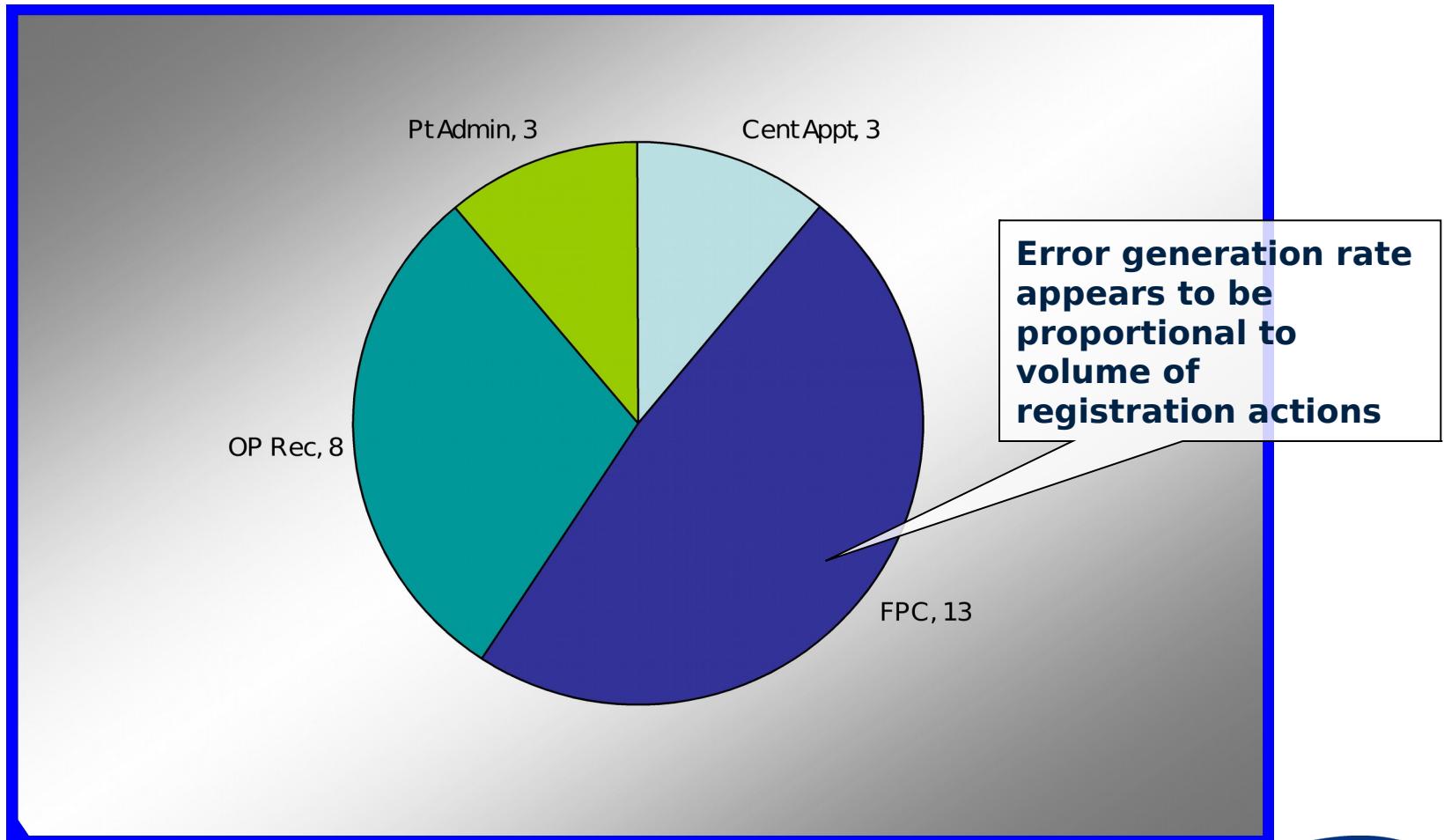
# Some causes for individual misidentification

- Human unintended error
  - Typographic errors
    - Critical errors (person SSN, Last\_Name)
    - Less critical errors (MIDDLE\_Name, Gender, SPONSOR\_SSN, etc.) can become critical in combination
  - Inaccurate information from source
  - Lack of identity confirmation through DEERS interactions (DEERS eligibility checks being by-passed)
- Human Intentional error
  - Time pressure
  - Multiple eligibilities
  - Pseudo-SSN
- Automated errors
  - Manual processing of DEERS PIT notification errors, etc.



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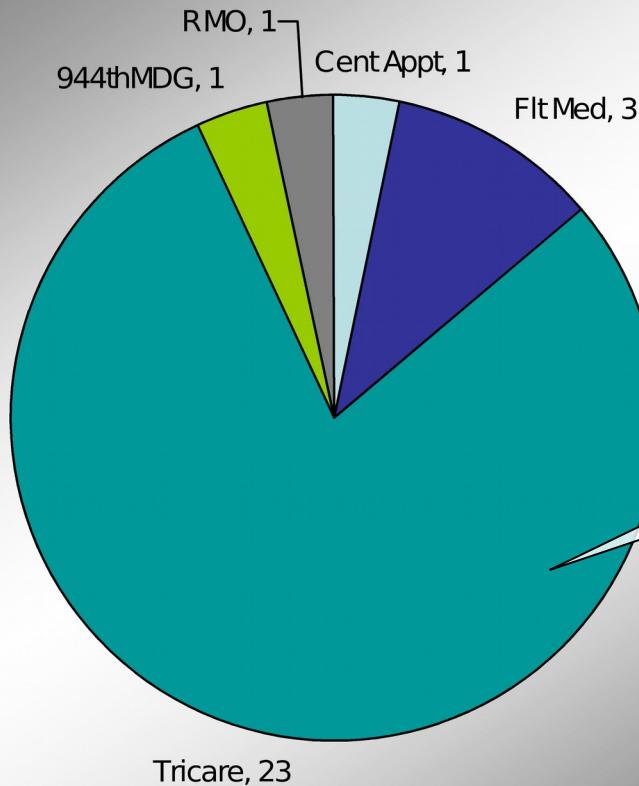
# Recent duplicate patients created by department



Total Duplicates - 28

453 # of Users with Registration capabi

# Recent duplicate patients created by department



Error generation rate  
appears to be  
proportional to  
volume of  
registration actions

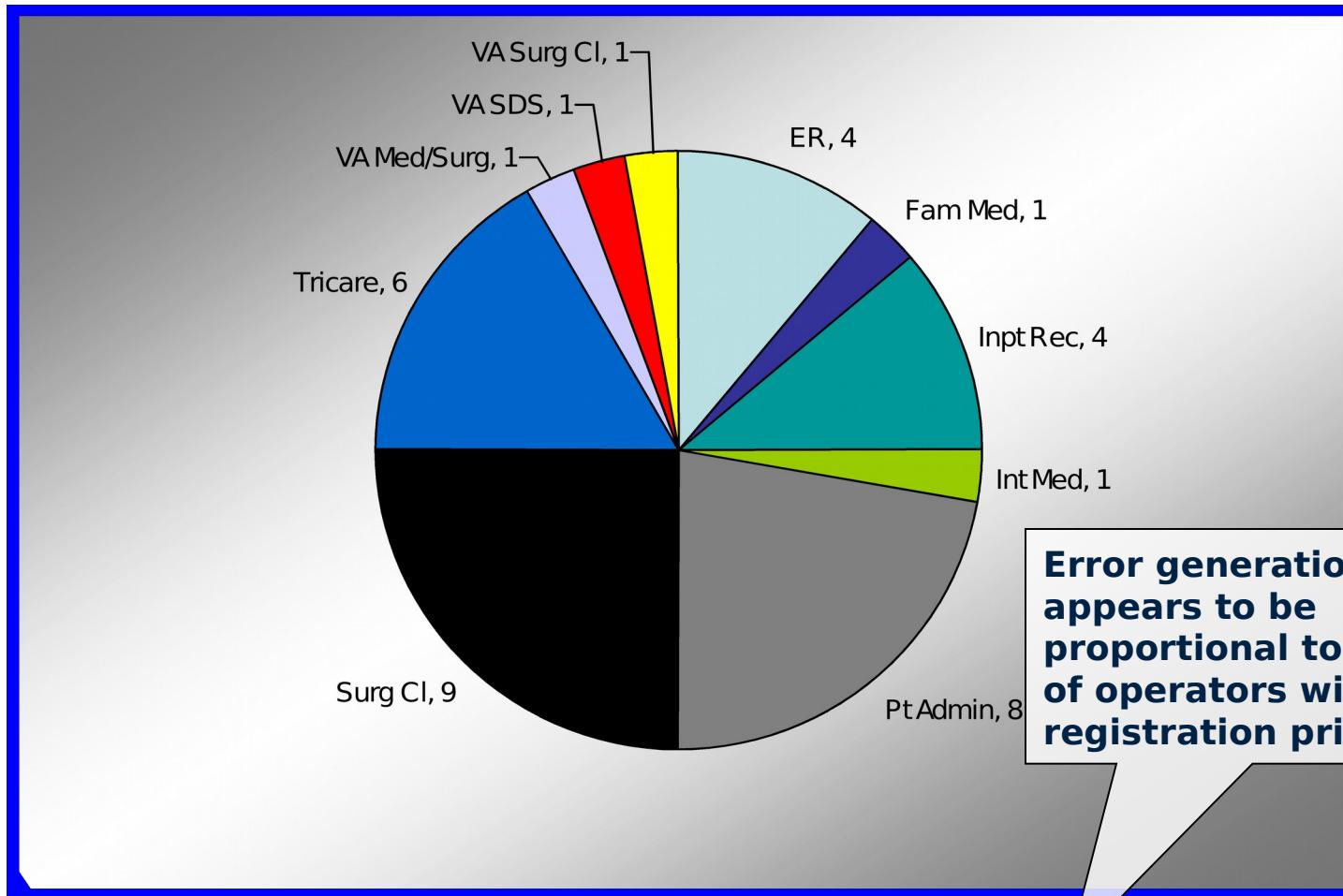
Total Duplicates - 29

658 - # of Users with Registration capability



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# Recent duplicate patients created by department



**Error generation rate  
appears to be  
proportional to number  
of operators with  
registration privileges**

**Total Duplicates - 36**

**1423 # of Users with Registration capabilities**



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# Majority of errors are man-made

- Errors have been classified by result
- Ongoing assessment of error generation mechanism
- Manual process developed to correct errors
- Secure database for aggregating, analyzing and reporting
- Exploration of automated error correction
- Experience, Standardized processes, Training, and IT enablers
  - Air Mobility Command experience
    - Pre-study error rate: 25%
    - Post-training error rate: 15%



Air Force assessment on all CHCS host sites except Wilford-Hall, Travis and Edwards

# Analogy to controlling hemorrhage

- Stop the bleeding
  - Identify the causes for identity errors and develop strategies to control them (low-hanging fruit)
- Prevent further bleeding
  - Correct the procedural and automated systems that facilitate identity errors
- Clean up the blood
  - Develop mechanisms to identify identity errors in the CDR (more complex, harder to locate)
  - Develop automated solutions to clean-up both CHCS/AHLTA host site data and the Central Data Repository (CDR) identity errors
- Go back and look again



# On the horizon

- MHS policy memorandum (Local level, CHCS registration)
  - Quality training, monitoring of operators
    - Limit CHCS '&' Fileman access code in user accounts to those with training, experience and understanding\*
    - Do not 'click through' DEERS verification
    - Special attention to personal SSN, Last\_Name, Sponsor\_SSN
  - Monitoring and accountability
    - DODI 6040.40 reporting up the chain
      - \* Granting of the ampersand in one's CHCS user file information grants the privilege to initiate individual registrations. There is no training or quality requirement for this privilege
    - Automated tools to assist leadership

# On the horizon

- Enterprise-Wide Scheduling and Registration (Enterprise level DEERS, CHCS and CDR
  - Multiple eligibilities in the same record
  - Facilitates registration completion
  - Allows addition to DEERS of newborns and civilian emergencies in order to obtain an EDI\_PN upon initial registration
- Modernize DEERS/EWS-R/CDR/CHCS communications
  - Auto-registration push of information from DEERS
  - Develop comprehensive individual identity strategy (how about pre-born benefits?)
- Eliminate non-standard processes, local-policies (Local and enterprise level)



# On the horizon

- Duplicate Patient Records Reduction initiative (CDR level)
  - Comb CDR for duplicate records
  - Analyze duplicates to determine patterns and similarities
  - Develop automated tools to correct duplicate records
- Artificial Intelligence Analysis of identity errors (CDR level)
  - Develop heuristic patterns to identify errors at the time of registration
- Air Force program (Local level)
  - Develop automated solutions for detection and correction of identity errors
  - Expand policy, training, reengineering, and tracking solutions to other Departments



# Questions?

# Who are you?

- An individual
- An employee
- A member of a family
- A member of a beneficiary group
- A member of a study group
- A consumer of resources
- A provider of services
- A reporter of information



# Long-term planning

- Process
  - DEERS check early in process
    - Web-based DEERS lookup
  - Search by patient SSN before initiating registration
  - Relook at all search modules
  - Allow de-synchronization of dependent/sponsor pair
  - Eliminate hand-written forms
  - Central policy - less 'county option'



# Long-term planning

- Policy
  - Consider development of central registration
  - Staffing and space
  - Require in-person registration
  - Ownership/performance metrics
  - Data quality monitoring
  - Relook at ‘mini-registration’ in ancillary settings
  - Relook at MCSC scheduling/registration incentives in contracts



# Long-term planning

- Training
  - Mandatory training
  - Certification
  - Periodic checks
  - Training staff

# Long-term planning

- Systems
  - Robust AHLTA Search module
  - Inability to de-synchronize dependent and sponsor pair
  - Measurements/reports
  - 24 hour ‘registration’
    - HelpDesk

# CHCS Patient Registration

# Patient Lookup

Select PATIENT NAME: DASH,CAROL

Are you adding 'DASH,CAROL' as a new PATIENT? Y (YES)

SPONSOR NAME: DASH,BRUCE

Are you adding 'DASH,BRUCE' as a new SPONSOR? Y

# Sponsor Information

Patient Name: **DASH, CAROL**

Sponsor - Initial Information

---

Sponsor Name: DASH, BRUCE

Sponsor FMP: 20

Sponsor Sex: **MALE**

Sponsor DOB: **24 Oct 1948**

Sponsor SSN: **800-00-0000**

Sponsor PATCAT: **F31 USAF RET LOS ENLISTED**



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# Patient Information

Sponsor Name: DASH, BRUCE  
Sponsor SSN: 800-00-0000

## Patient - Initial Information

---

Patient Name: DASH, CAROL  
FMP: 30  
Sex: FEMALE  
DOB: 28 Oct 1948  
SSN: 800-00-1111  
PATCAT: F43 (USAF FAM MBR RET)



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# DEERS Eligibility Request

NEW DEERS INTERFACE

Sending Family Query for DASH,CAROL  
from 15 May 2008  
to 15 May 2008

Processing .....



# Mini Registration

Patient: **DASH,CAROL** Mini Registration  
FMP/SSN: **30/800-00-0000** DOB: **28Oct48** PATCAT: **F43** Sex: **F**

Patient: **DASH,CAROL** DOB: **28 Oct 1948**  
PATCAT: **F43** (USAF FAM MBR RET) FMP: **30**  
Home Phone: W: SSN: **800-00-1111**  
Patient Addr: Sex: **FEMALE**  
City: St/Cntry: Zip:  
Sponsor: DASH,BRUCE Service: **AIR FORCE**  
FMP: **20** Sex: **MALE** Sponsor SSN: **800-00-0000**  
PATCAT: **F31** (USAF RET LOS ENLISTED) DOB: **28 Nov 1943**  
Command Sec: Rank:  
Local UIC:  
Duty Address:  
City: St/Cntry: Zip:  
Duty Phone: DSN:



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# Full Registration Patient Info

Patient: **DASH, CAROL**  
FMP/SSN: **30/800-00-0000**

DOB: **280ct48**

Patient Information  
PATCAT: **F43** Sex: **F**

Patient: **DASH, CAROL**  
PATCAT: **F43** (USAF FAM MBR RET)  
FMP: **30**  
Sex: **FEMALE**

Ethnic Origin: **OTHER**  
Mar Status: **MARRIED**  
Command Int:

Patient Addr:

:

City:

St/Cntry: Zip:

Home Phone:

Work Phone:

O/P Rec Loc:

O/S Rec Loc:

Primary Phy:

Reg Comment:

DOB: **28 Oct 1948**

SSN: **800-00-1111**

Religion:  
Race: **WHITE**  
Civ Occup:



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# Full Registration Sponsor Info

Patient: **DASH, CAROL**  
FMP/SSN: **30/800-00-0000**

DOB: **28Oct48**

Sponsor Information  
PATCAT: **F43** Sex: **F**

Sponsor: **DASH, BRUCE**  
FMP: **20** Sex: **MALE**  
PATCAT: **F31** (USAF RET LOS ENLISTED)

Command Sec:

Service: **AIR FORCE**  
Sponsor SSN: **800-00-0000**  
DOB: **28 Nov 1943**  
Rank: **TECHNICAL SERGEANT**  
Mil Occup Code:

DEERS UIC:  
Local UIC:  
Unit Loc:  
Lgth Service:  
Duty Address:  
:  
City:  
Duty Phone:

Flying Status:

St/Cntry: Zip:  
DSN:



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# Full Registration EC/NOK Info

Patient: DASH, CAROL  
FMP/SSN: 30/800-00-0000

DOB: 280ct48

EC/NOK Information  
PATCAT: F43 Sex: F

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## EMERGENCY CONTACT INFORMATION

Name:

Relationship:

Address:

:

City:

St/Cntry:

Zip:

Phone:

## NEXT OF KIN INFORMATION

Name:

Relationship:

Address:

:

City:

St/Cntry:

Zip:

Phone:



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